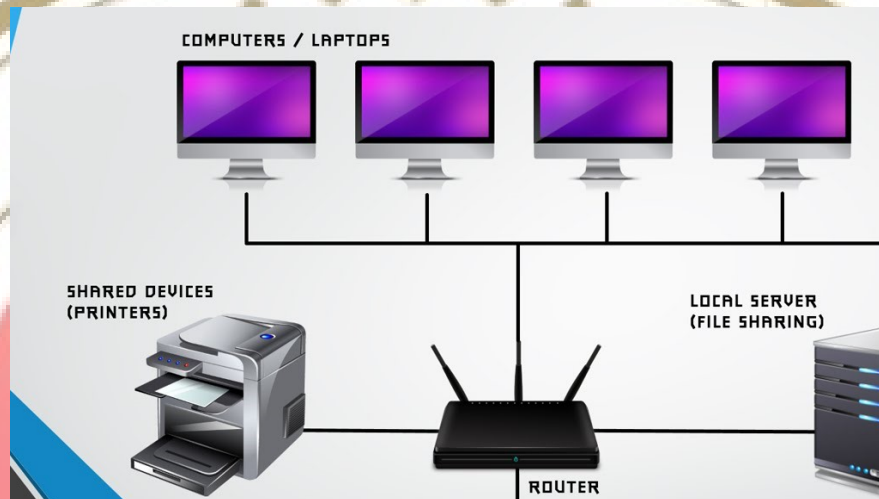# UNIT 5-CONCEPTS OF INTERNET

WHAT IS INTERNET?

Internet is **a technology of connecting multiple computers together through a network**. The term internet has been derived from two terms, **interconnection** and **network**. A network is simply a group of computers that are connected together for sharing information, resources & communication.

A Network(Internet)

Several such networks have been joined together across the world to form internet. Thus, **Internet is a network of networks.** Internet is an ocean of information.

WWW: WWW is web server (computer). In web server information are stored in the formof web pages. The location at which the web pages are stored is called a website.
Web server has information like arts, business, cooking, government, science, politics, health, tours & travels, sports, news, history, education, entertainment and many more.
Web Page: A web page is a document, typically written in HTML. Many such web pages make a web site.
Web Site: A web site is a collection of various inter-related web pages written in HTML.First page of web site is called home page or index page.
Web Portal: A web portal is a web site that presents information from different sources. A web portal generally consists of a search engine, e-mail service, news, advertisements, etc. Examples are MSN, Google, etc.

APPLICATIONS OF INTERNET (USE OF INERNET)

- **Get Information:** Internet is an ocean of information. Information may in the form oftext file, graphics file, sound file, full motion video file or even program file.
- Communication with Other People: Email, Chatting, Video Conferencing, etc.
- **Email:** Using Email (Electronic Mail) a user can send text, pictures, sound, programs, or even movie clip to any other person on the internet anywhere in the world.
- **Chatting & Video conferencing:** Using IRC (Internet Relay Chat) you can speak to other users around the world.

- Connect to other computer system: Via internet we can link our computer to remote computer. User can access/send the data andfile from his computer to remote compfuter.

- E-commerce: Internet is also used in E-Commerce. It is used for online buying and selling of information,services & products via computer network. Following are the list of online shopping web sites.

  - www.flipcart.com
    www.amazon.com
    www.homeshop18.com

- Online Reservation: Using internet you can do online reservation of train tickets, bus tickets, air tickets, movietickets, tour tickets etc.

- Online Banking: Internet is also use to operate bank account. (Transferring money, transactions for deposit andwithdraw related operations, balance inquiry etc)

- Online Share Trading: Using internet you can get latest updates of share market, you can buy or sell your shareonline.

- Online Bill Payment: Internet is also use to pay light bill, gas bill, phone bill, etc. It can also be used to payinsurance premium, etc.

- Online Darshan: Using internet you can have online live darshan of various temples. For example www.siddhivinayak.org, www.sai.org.in

- Internet is use to fill online form, to give online exam. Internet is also use to read newspapers, magazines, newsletters, etc.

HISTORY OF INTERNET:

In 1969, the **ARPANET** (**A**dvance **R**esearch **P**roject **A**gency **N**etwork) was developed. Its task was to develop a reliable communication network for military use that would not be interrupted in case of partial destruction from a nuclear attack. This **ARPANET** was our first internet.
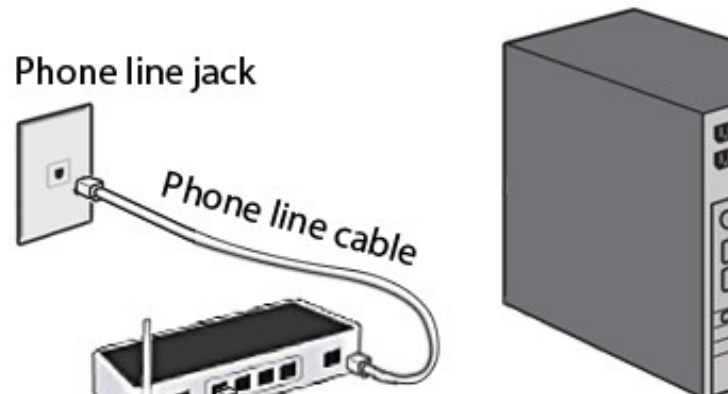
TYPES OF INTERNET SERVICES:

ISP (Internet Service Provider): An Internet Service Provider (ISP) is a company that provides Internet access. Like BSNL, Idea, Airtel, Vodafone, Tata, Reliance Jio are the example of ISP. An ISP typically charges a monthly or hourly connection fee.

Selection of internet service depends on location, budget and speed needs.The major types of internet services:

(A)DIGITAL SUBSCRIBER LINE (DSL):

DSL stands for "Digital Subscriber Line". It uses existing telephone lines to transport high-bandwidth data.

DSL's "two-wire" technology allows you to get broadband internet without interfering with your phone services. DSL works within the frequencies that the telephone doesn't so you canuse the Internet while making phone calls.

DSL is the cheapest form of broadband in the market.

The DSL system is efficient but it has a drawback. DSL Internet service only works over a limited physical distance. The farther away you are, the slower your internet speed would be.However, for the prices, one can consider their options and try to find an ISP that is located closer.

(B) CABLE INTERNET:

Internet is also provided through cable connection. Because of the infrastructure's ability to transfer more data at faster speeds, cable internet connections tend to be very fast, often upwards of 100 Mbps.

However, you'll be sharing that connection with everybody in your neighborhood. This means you'll be experiencing slower speeds, especially during peak hours.

It is 20 to 100 times as fast as a typical cable modem or DSL (Digital Subscriber Line) connection.
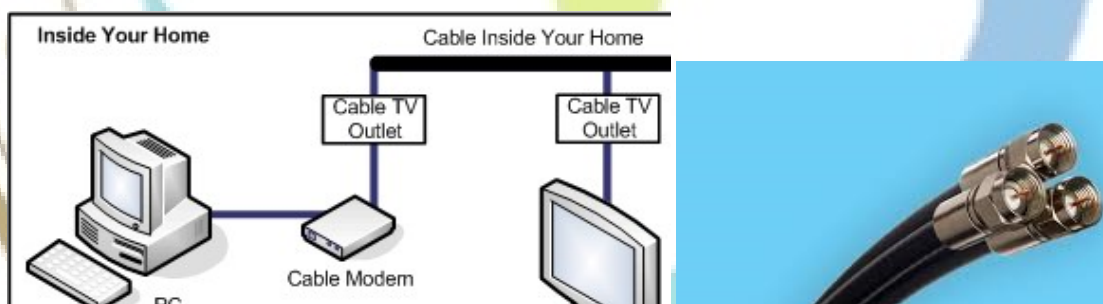
GTPL is one of India's leading Cable TV and Broadband service providers. High-speed internet access is also called as FTTH promises connection speeds of up to 100 megabits per second (Mbps).

(C)FIBER OPTIC:
It is high-speed internet broadband connection service which will use fiber-optic connections. Because of the material properties of these cables, data is transmitted at very fast speeds, allowing for quality, uninterrupted high-speed internet.

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The only drawback is that fiber optic internet is not available everywhere. But, ISPs are constantly growing their network and before long you just might have a fiber-optic internet connection available in your neighborhood.

Reliance's JioFiber (Jio Giga Fiber) is a **high-speed internet** broadband connection service which will use fiber-optic connections. (Fiber to the home (FTTH)). It has speed up to 1 GBPS. (Giga Byte Per Second).

(D) SATELLITE

This type of internet is least used. This type of connection delivers the internet from internet service provider (ISP) to your location via satellite.

Satellite dish that receives a signal and then carries this internet signal into the home via cableto a modem or router

Satellite internet is a good option if you live in a rural area that does not have cable, DSL, or fiber optic infrastructures in place.

(E) MOBILE INTERNET

Mobile internet is provided by cellular network providers like JiO, Airtel, VI and BSNL. The internet connection is transmitted from cellular towers to your internet device, so mobile internet is available anywhere there is a signal from that specific cellular provider.

Mobile internet usually comes in two forms: smart phone hot spots and mobile hotspots. Smart phone hot spots can be set up through your smart phone, which accepts the connection from the cellular towers and then relays it to your computer or tablet. Smart phones like the iPhone and Android are capable of doing this by default. Mobile hotspots are separate devices created solely to transmit data from the towers to your internet device.

HARDWARE: MODEM, ROUTER, BLUE TOOTH, FIRE-STICK

(I) MODEM:
Modem is short for "Modulator-Demodulator." It is a hardware component that allows a computer or another device, such as a router or switch, to connect to the Internet.

- Modulation: Modem converts digital data from a computer or other device into an analog signal that can be sent over standard telephone lines.

- Demodulation: it takes an analog signal from a telephone or cable wire andconverts to digital data (1s and 0s) that a computer can recognize.

Modulation / Demodulation
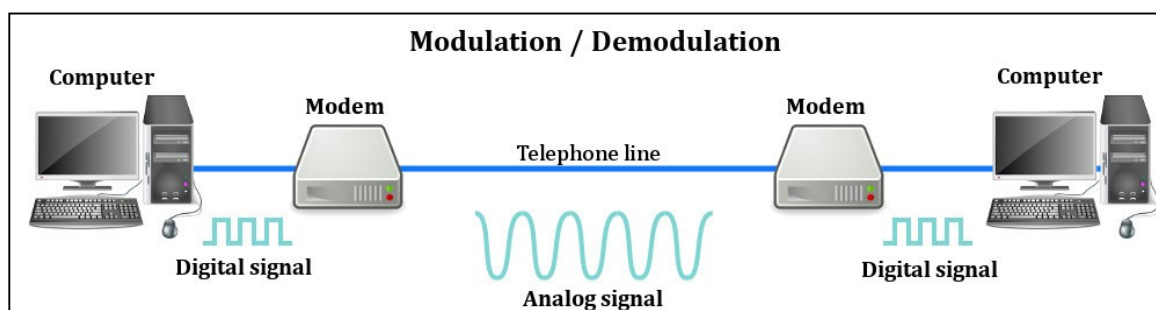
(II)ROUTER:

A router is a networking device that distributes (or routes) your internet connection from your modem to all of your devices such as mobile phones, laptops, desktop computers and smart TVs.
A router helps you connect multiple devices to the Internet, and connect the devices to each other.

The main function of a router is to handle the traffic between various networked devices. Router uses routing tables to understand where traffic is coming from and where it should go. For example, if you want to watch a video on your phone, your router makes sure it is your phone that receives the video information, not your laptop connected to the same network.
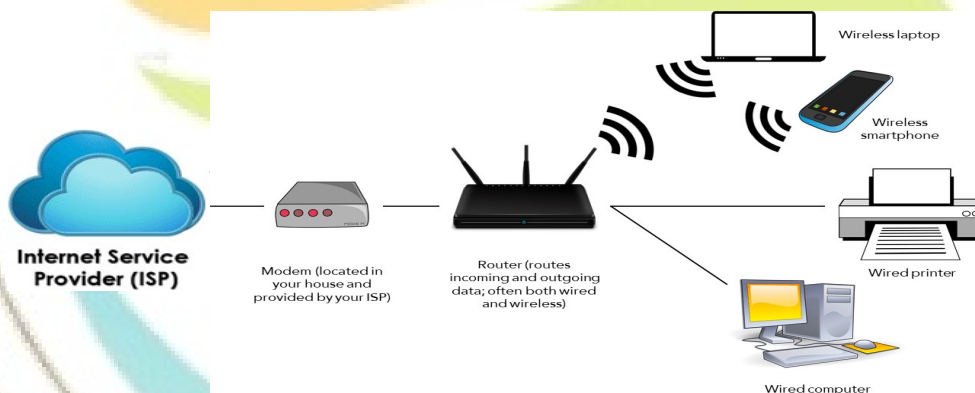
WHAT'S THE DIFFERENCE BETWEEN A MODEM AND A ROUTER?

Modem	Router
Using modem you can connects to theinternet.	Router distributes the internet connection tothe different devices.
modem connects to the internet	connects devices to Wi-Fi
Uses a WAN network	Creates a LAN network

Decodes the signal from an ISP.	Does not decode the signal from an ISP.
Is not responsible for Wi-Fi.	Creates and manages Wi-Fi

(III)BLUETOOTH:

Bluetooth is wireless (short radio waves) communication standard which allows electronic devices to connect and interact (communicate) with each other.

It can be found in a number of gadgets (devices), like mobile phone, printer, laptop, PC, digital camera, speaker, laptop, wireless mouse, wireless keyboard, hands-free headset, car stereos, watches and more.

Bluetooth works over a maximum distance of 164 feet between devices. It can be used for

- Transferring of files between two device
- Play Multiplayer Games Over Bluetooth
- Connect Different Devices (mouse, printers, keyboards, gamepads etc.)
- Control Home Security Gadgets
- In cars for navigation, hands free calling, speakers etc.

(IV)FIRE-STICK:

1 PLUG FIRE TV STICK INTO YOUR HDTV (HDMI PORT)

2 PLUG THE CHARGER INTO A WALL SOCKET

3 CONNECT TO WI-FI AND START STREAMING

Fire-Stick is a streaming device that connects to your TV and lets you stream content over the internet. FireStick is an Android-based device.

The Fire Stick plugs into your TV's HDMI port giving you access to your favorite TV shows, movies, subscription services, music, photos, and games.

One can access thousands of movies and TV episodes from Prime Video, Netflix, Hotstar, Sony LIV and more. Enjoy live TV, including sports and news. Plus, stream millions of songs through Amazon Prime Music, Gaana, and more. Subscription fees may apply.

INTERNET CONNECTION USING HOTSPOT, WI-FI, CABLE :

HOTSPOT OR WI-FI HOTSPOT OR WIRELESS HOTSPOT:

- A hotspot is a physical location where people can access the Internet in mobile devices such as your laptop or tablet or smartphone.
- Simply we can say that, hotspots are the physical places where users can wirelessly connect their mobile devices, such as smartphones and tablets, to the Internet.
- It allows sharing internet between many devices via Wi-Fi.
- A hotspot can be in a private location or a public.

- **Public hotspots** are created to give internet access. Public hotspots are often found at airports, bookstores, coffee shops, department stores, fuel stations, hotels, hospitals, libraries, restaurants, supermarkets, train stations, and other public places.

- **Private hotspot**, often called tethering to allow Internet access to other devices. It provides connectivity in limited range of area.

HOW TO SET UP MOBILE HOTSPOT ON ANDROID?

1. Open mobile **Settings**.
2. Tap **Portable hotspot** from list.
3. Now, go to "**Set up portable hotspot**" option.
4. **Type the** Name of your network.
5. Type password.

- **Wi-Fi:** (Wireless Fidelity)
  - Wi-Fi is acronym of Wireless Fidelity
  - Wi-Fi is the technology that allows your smartphone, laptop or tablet to access the Internet through a wireless connection.
  - Like mobile phones, a Wi-Fi network makes use of radio waves to transmit information across a network.
  - It uses radio signals to send and receive data.

HOW TO CONNECT WITH PUBLIC WI-FI NETWORKS?

Keep Wi-Fi ON in your mobile. After that, your mobile will connect automatically with available strong network.
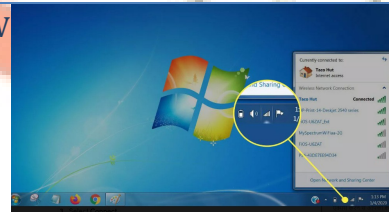
HOW TO CONNECT WITH PRIVATE WI-FI NETWORKS?
1. Open mobile **Settings**.
2. Tap **Wi-Fi** option from list.
3. First tap on Wi-Fi switch and make it on.
4. Click **Refresh** option and check all available Wi-Fi networks.
5. Select network and give password.

HOW CONNECT TO A WI-FI NETWORK ON WINDOW
1. Select the **wireless network icon** in the task bar.
2. Select the wireless network you wish to connectwith.
3. Select **Connect**.
4. Enter Security key (Password).

	Wi-Fi	Hotspot
Definition	It stands for wireless fidelity. It isa wireless technology that allows access to the internet. It is used for LAN(Local Area Networks).	Hotspot refers to wireless access points that provides internet access from a physical location typically using the Wi-Fi.
		There will be no hotspot without Wi-Fi
Speed	Wifi provides high speed as compared to hotspot in the case of multiple users.	The hotspot offers lower speed than wifi in the case of many users.
Type	It is a family of protocols.	It is a physical location.
ProvidedBy	Provided by the Internet Service Provider.	Provided by corporations, and places suchas hotels, libraries, etc.
Security	It is more secure.	It is less secure.

CABLE INTERNET CONNECTION:

Cable Internet:

Cable Internet is a category of broadband Internet access that uses the infrastructure of cableTV network to provide Internet services. Cable Internet provides connectivity from the Internet service provider (ISP) to the end users in a similar manner as digital subscriber line (DSL) and fiber-to-the-home (FTTH).

INTRODUCTION OF WEB BROWSER AND RELEVANT TERMINOLOGIES:

WEB BROWSER

A web browser is software that is used to access and view web sites. Web browser is used to view web pages. You can type the address of the web page you want to visit into the **address bar**.

Examples of Web browser are

- Google chrome,
- Internet explorer,
- Netscape navigator,
- Mosaic,
- Opera,
- Mozilla Firefox,
- JioBrowser

The first page of the web site is called as the home page or index page. It contains introductory information and/or a master menu of the web site.

URL (UNIFORM RESOURCE LOCATERS) –

URL is a web address. It is a standardized way of representing different documents, media & network services of the WWW.

Example of URL is http://www.mkics.in or an Internet Protocol (IP) address (e.g. 192.68.20.50). Most people enter the name when surfing, because names are easier to remember than numbers.

For example: *protocol://hostname:port_no/path*
            http:/www.mkics.in/students/syllabus.html

A web address (URL) typically starts with a protocol name (http), followed by the name host name (www.mkics.in) and the file name "syllabus.html" in the folder "students".

ADDRESS BAR OR LOCATION BAR OR URL BAR:

In web browser, you can type the address of the web page you want to visit into the **address bar**.

DOMAIN OR DOMAIN NAME
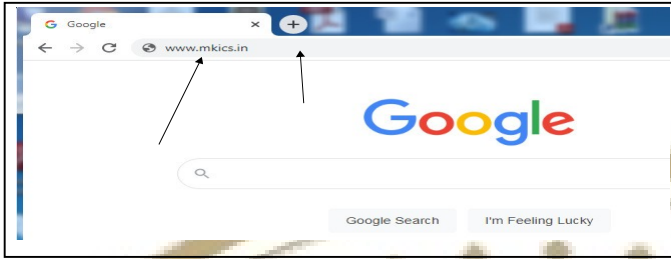
A domain or domain name is the location of a website. For example, the domain name "google.com" points to the IP address "216.58.216.164". Generally, it's easier to remember a name rather than a long string of numbers.

A domain name is used for finding and identifying computers on the Internet. Computers useIP addresses, which are a series of number for example 216.58.216.164

IP (Internet Protocol) address uniquely identifies a computer or device on a TCP/IP network.

WHY DOMAIN NAMES ARE REQUIRED?

Domain names are for the convenience (ease) of the user as names are much easier to remember than IP addresses.

HYPERLINK: OR LINK

A hyperlink is a word, phrase, or graphics that links to (jumps to or navigates to)
  ➢ to another web page
  ➢ to another location within the same page
  ➢ to a graphics, a sound or video file

Hyperlinks are often blue and underlined. When you move the cursor over a hyperlink, thearrow should change to a small hand.
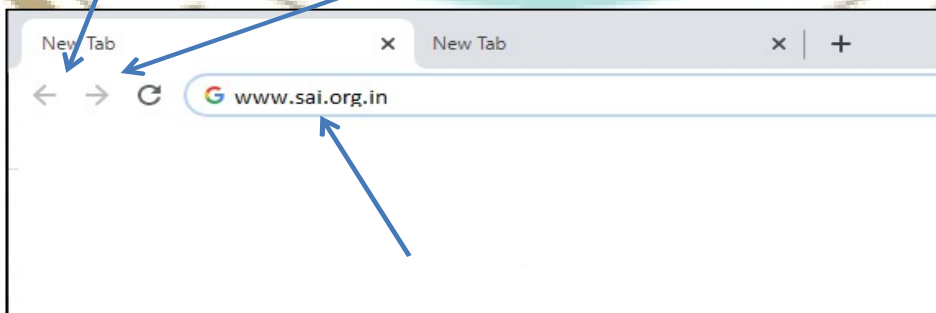
NAVIGATION BUTTONS

A web browser navigation bar includes the back and forward buttons, as well as the addressbar (location bar) where URLs are entered.
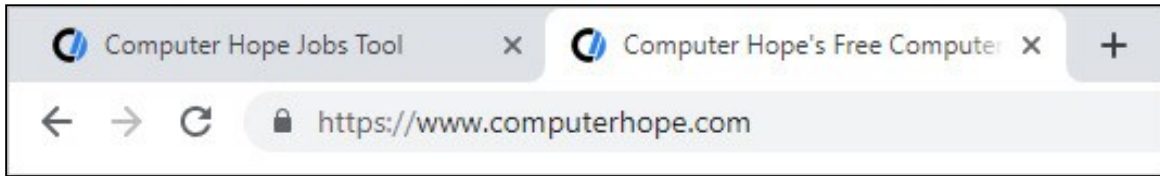
Back Button

Forward Button

TABBED BROWSING:

Tabbed browsing: several websites can be opened (browse) in a single browser window.
To do tabbed browsing: Right click on hyperlink and select the option "open link in new tab"In following image two tabs open in Google Chrome.

BOOKMARKS OR FAVORITES

In web browser bookmark command is used to save the web page's address (URL) of a Web page so that you can easily re-visit the same page at a later time.

In Microsoft Internet Explorer, bookmarks are referred to as favorites.

To bookmark a page using your mouse, click the star icon to the right of the address bar.

HISTORY OR BROWSING HISTORY OR WEB HISTORY

Web browsing history is the list of web pages a user has visited recently, as well as associated data such as page title and time of visit.

Most browsers support the Ctrl + H keyboard shortcut to open the browser history.

CONCEPT OF CLOUD

WHAT IS CLOUD? ONLINE STORAGE

A cloud is a network of servers that can be accessed via internet.

The term cloud refers to a network or the internet. It is a technology that uses remote serverson the internet to store, manage, and access data online rather than local drives. The data canbe anything such as files, images, documents, audio, video, and more.

Cloud Computing refers to manipulating, configuring, and accessing the hardware and software resources remotely.

There are the following operations that we can do using cloud computing:
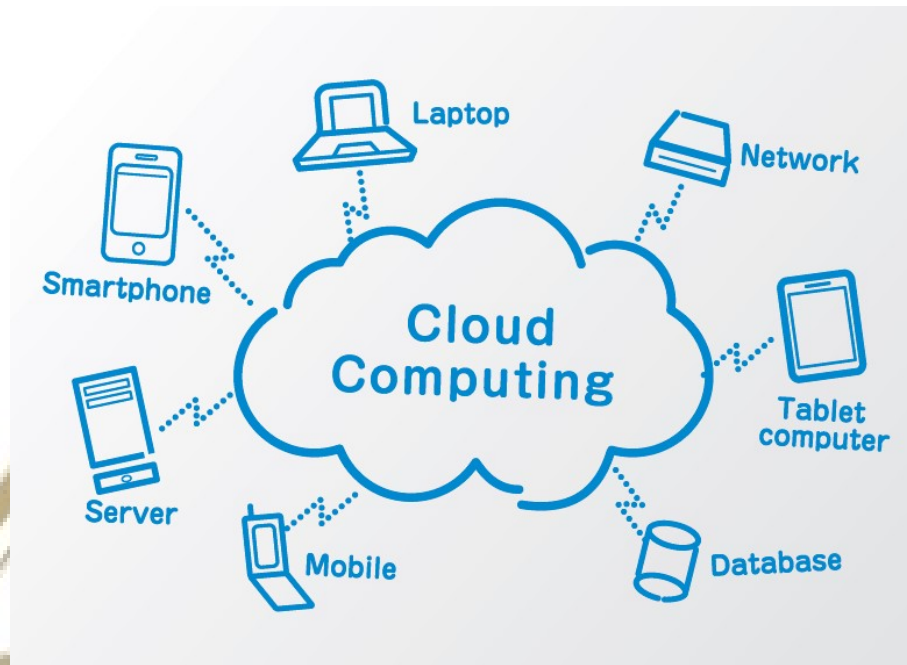
- Developing new applications and services
- Online data Storage, back up, and recovery of data
- Hosting blogs and websites
- Delivery of software on demand
- Analysis of data
- Streaming videos and audios

ADVANTAGES OF CLOUD:

- We can use software without **installing** on our computer. Hence, the Cloud Computing is making our business applications mobile
- Cloud computing offers **platform independency**: The **user need not worry aboutthe hardware and operating system** you are using on your personal computer.
- **Excellent accessibility**: It allows us to quickly and easily access store information anywhere, anytime in the whole world, using an internet connection. An internet cloud infrastructure increases organization productivity and efficiency by ensuring that our data is always accessible.
- **Low Cost:** It minimizes or avoids infrastructure costs. To take the services of cloud computing, company need not to set its own infrastructure and **pay-as-per usage** of resources. It reduces both hardware and software maintenance costs for organizations.
- **Device and Location Independence:** It enables the users to access systems using a web browser regardless of their location or what device they use e.g. PC, mobile phone, etc. **Users can connect from anywhere**.
- **Back-up and restore data:** Once the data is stored in the cloud, it is easier to get back-up and restore that data using the cloud.
- **Unlimited storage capacity:** It offers us a huge amount of storing capacity for storing our important data such as documents, images, audio, video, etc. in one place.
- **Data security:** It offers many advanced features related to security and ensures that data is securely stored and handled.

DISADVANTAGES

- **Internet Connectivity:** If you do not have good internet connectivity, you cannotaccess these data.

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⬜ **Security:** While sending the data on the cloud, there may be a chance that your organization's information is hacked by Hackers.

TYPES OF CLOUDS

1) **Public Cloud**: Public cloud is **open to all** to store and access information via theInternet using the pay-per-usage method.

   Example: Amazon elastic compute cloud (EC2), IBM SmartCloud Enterprise, Microsoft, Google App Engine, Windows Azure Services Platform

2) **Private Cloud**: Private cloud is also known as an internal cloud or corporate cloud. It is used by organizations to build and manage their own data centers internally or bythe third party. It can be deployed using Opensource tools such as Openstack and Eucalyptus.

3) **Hybrid Cloud**: Hybrid Cloud is a combination of the public cloud and the private cloud. Hybrid cloud is partially secure because the services which are running on the public cloud can be accessed by anyone, while the services which are running on a private cloud can be accessed only by the organization's users.

   Example: Google Application Suite (Gmail, Google Apps, and Google Drive), Office 365 (MS Office on the Web and One Drive), Amazon Web Services.

PURPOSE AND APPLICATION OF CLOUD (EX OF GOOGLEDOC)

Some of the widely famous cloud computing applications are business, entertainment, data storage and backup, social networking, management, entertainment, education, art and global positioning system, etc.

(1)DATA STORAGE AND BACKUP:
Cloud computing allows us to store information (data, files, images, audios, and videos) on the cloud and access this information using an internet connection. As the cloud provider is responsible for providing security, so they offer various backup recovery application for retrieving the lost data.

A list of data storage and backup applications in the cloud are given below:

Dropbox, Google Drive and **Amazon S3** are popular examples of cloud backup solutions.
Box.com: It allows us to store different files such as Excel, Word, PDF, and images on thecloud. The main advantage of using box is that it provides drag & drop service for files andeasily integrates with Office 365, G Suite, and more than 1400 tools.
Mozy: Mozy offers online backup service for files to prevent data loss

(2)BUSINESS:
 Google Apps for Business
Office tools like **Microsoft Office 365** and **Google Docs** use cloud computing, allowing youto use your most-productive tools over the internet. You can work on your documents, presentations and spreadsheets – from anywhere, at any time.
Google Docs is the word processor component of Google's online office suite. It's a free alternative to Microsoft Word.

Google Docs is Google's browser-based word processor. You can create, edit, and share documents online and access them from any computer with an internet connection.   All your changes are automatically saved as you type.

(3)SOCIAL NETWORKING:
Facebook, LinkedIn, MySpace, Twitter, and many other social networking sites use cloud computing.

(4)COMMUNICATION:
Most of the messaging and calling apps like **Skype** and **WhatsApp** are also based on cloudinfrastructure. This allows you access your information from anywhere via the internet.

(5)CHATBOTS
Siri, Alexa and Google Assistant – all are cloud-based natural-language intelligent bots.

(6)ART APPLICATIONS
Cloud computing offers various art applications for quickly and easily design **attractive cards, booklets,** and **images**. Some most commonly used cloud art applications are Moo, Vistaprint, **Adobe Creative Cloud**

CONCEPT OF ONLINE DATA BACKUP (CLOUD STORAGE)

WHAT IS CLOUD STORAGE?
CLOUD STORAGE is a way of storing data online instead of your local computer. It requires an internet connection in order to upload, modify, and share documents, presentations, spreadsheets, images, audio, video, etc. with others.

Examples of free or commercial Cloud Storage Providers are Mega, Dropbox, Box, Google Drive, Microsoft OneDrive, Apple ICloud, Amazon Cloud Drive, etc.

GOOGLE DRIVE: STORE, SYNC AND SHARE FILES EASILY.
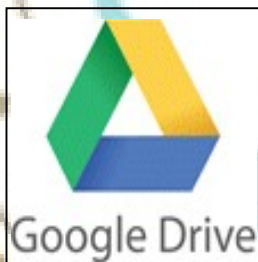
- Google Drive is a free and paid cloud storage service. (Online data storage service).
- You can store your file on their server.
- Synchronize files across devices. It provides real time synchronization.
- You can access them from anywhere, at any time with any device with an internet connection.
- You can share them with other people.
- It offers 15 GB of free storage space. (By signing up for a Google account).
- Google Drive contains Google Docs (for documents), Google Sheets (for spreadsheet), and Google Slides (for presentations), drawings, forms, and more.
- Files created and edited through the office suite are saved in Google Drive.
- Cloud storage saves the costs of purchasing and maintaining a physical server at your company.